

## Sequence Listings

### Sequence 1 – Human cDNA sequence of PARP-1

1 cggccgcccc gccccggggg cagggaagc cttaattacg gaattaccgc gagcaaggag  
61 cgggaatcg gggagcgtcc ggagctagct ggatcctcta ggcaggatgg tgatgggaat  
121 ctttgcaaat tgtatctct gttgaaagt gaagtacita cctcagcagc agaagaaaa  
181 gctacaaact gacattaagg aaaatggcgg aaagtittcc ttttcgttaa atcctcagtg  
241 cacacatata atcttagata atgctgatgt tctgagtcag taccaactga attctatcca  
301 aaagaaccac gttcatattg caaaccaga ttttataagg aaatctatca gagaaaagag  
361 actctggat gtaagaatt atgaccta taagccctg gacatcacac cacctcctga  
421 tcagaaggcg agcagttctg aagtgaaac agaaggctca tgcccgagca gtccacaga  
481 ggaggaagac actgtggaac tcactgagtt tggatgcag aatgtgaaa ttctcatct  
541 tctcaagat ttgaagttg caaatataa caccttgag aaagtggaa tggagggag  
601 ccaggagct gtggtggtg agcttcagtg ttccgggac tccaggagact gtcctttct  
661 gatactca cacttctcc tggatgagtg catggagact agaagacagt ttgtataaa  
721 gaaaacctct gaagatgcaa gtgaatact tgaataatc attgaagaac tgaagaaca  
781 aggatctca taagagaac attcacacc tgaagcaacc caattagcat ctgaacaat  
841 gcaagcattg ctttggagg aagcatgaa ttcaagcact ctgagccaag aggtgagcga  
901 tttagtagag atgattggg cagaggccct gggccacctg gaacacatgc ttctcaagcc  
961 agtgaacagg attagcctca acgatgtgag caaggcagag gggattctcc ttctagtaa  
1021 ggcagcactg aaaaatggag aaacagcaga gcaattgcaa aagatgatga cagagtitta  
1081 cagactgata cctcacaag gcacaatgcc caaagaagtg aacctgggac tattggctaa  
1141 gaaagcagac ctctgccagc taataagaga catggttaat gtctgtgaaa ctaattgtc  
1201 caaaccaac ccaccatccc tggccaaata ccgagcttg aggtgcaaaa ttgagcatg  
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1321 taagagccca gtggaigtct tgcagatatt tagagttggc agagtgaatg aaaccacaga  
1381 gttttgagc aaacttgta atgtgagccr cttgtgcat ggttctctg tacaaaacat  
1441 cgtgggaatc ttgtgtgag ggttgcttt acccaaaagta gtggaagatc gtggtgtgca  
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1561 tatcaagtac tcacaccgg gagagacaga tggcaccaga ctctgctca ttgtgacgt  
1621 agccctcgga aagtgtatgg acttacatga gaaggacttt tcttaactg aagcaccacc  
1681 aggtacgac agtgtgcatg gagttcaca aacagcctct gtcaccacag acttigagga  
1741 tgatgaattt gttgtctata aaaccaatca ggttaaatg aaatatatta ttaaatttc  
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1861 cagacctgag ttitcaaat tticaaagt tgaagattac cagttaccag atgccaaaac  
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1981 tgtccacatc aaagggagaa tcatagacac ttagcccgag gtcattgttt ttacagata  
2041 cacaataaa agtcacgtgc ccattgaggc aaatatatc ttcccttgg atgacaagge  
2101 cgtgtgtgt ggcttgaag ccttcatca tgggaagcac atagtggag agattaaaga  
2161 gaaggaagaa gccagcaag agtacctaga agcctgacc caggccatg gcgcttacct  
2221 gatgagtcag gatgtccgg acgttttac tgaagtgtt ggaaacttac ccctaaggc  
2281 taaggittcti ataaaaatta cctacatcac agaactcagc atcctgggca ctgttggtgt  
2341 cttttcatg ccgcccagg tagcacctg gcaacaggac aaggtcttga atgaaaacct  
2401 tcaggataca gttagaaga tttgataaa agaataagga acaagcaaa gcttctctt

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PCT/GB2004/003183

2461 gactatgtct attgagatgc cgtacgtgat tgaattcatt ttacgtgata ctcatgaact  
2521 gaaacaaaag cgcacagact gcaaagctgt cattagcacc atggaaggca gctccttaga  
2581 cagcagtgga ttttctctcc acatcggtt gtctgtctcc tatctocaa gaatgtgggt  
2641 tgaanaacat ccagaaaaag aaagcgaggg ttgcatgctt gtcttcaac ccgatctcga  
2701 tctcgacctc octgacctag ccaatgagag cgaagtgaat atttgtcttg actgtctccag  
2761 ttccatggag ggtgtgacat tottgcaagc caaggaaato gccttgcatg cgtgtctctt  
2821 ggtgggtgag aagcagaaag taaatattat ccagttcggc acaggttaca aggagctatt  
2881 ttgtatctct aagcatatca caagcaatc cgcggcagca gagttatca tgtctgccac  
2941 acotaccatg gggaacacag acttctggaa aacactccga tatcttagct tattgtaccc  
3001 tgcctgaggg tcacggaaac tctccttggt gtctgatggg cactccagg atgagagcct  
3061 gacattacag ctgtgaaga ggagccggcc gcacaccagg ttatcgctt gcggtatcgg  
3121 ttctacagca aatcgtcacg tcttaaggat ttgtccag tgtgtgccc gattattga  
3181 atattttaat gcaaatcca agcatagttg gagnaacac atagaagacc aaatgaccag  
3241 gctatgtctt ccgagttgcc actctgtctc cgtcaaatgg cagcaatca atccagatgc  
3301 gcccgaggcc ctgcaggccc cagcccagggt gccatccttg ttgcaatg atcgactcct  
3361 tgtctatgga ttacttctc actgcacaca ggcaactctg tgtgactaa ttcaagagaa  
3421 agaattttgt acaatgggtgt cgaactactga gttcagaag acaactggaa ctatgatoca  
3481 caagctggca gcccgagctc taatcagaga ttatgaagat ggcattcttc atgaaatga  
3541 aacagctcat gatgatgaaa aacaaacctt gaattctctg attattaaac tcagtaaaga  
3601 aaactototo ataacacaa ttacaagctt tgtggcagtt gagaaaagg atgagaatga  
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3841 ttccaaaaga aaatgggaat tatctcagcc agaagtttct gaagattttg aagaggatgc  
3901 cttaggtgta ctacagctt tcacatcaaa ttggaactt ggacgtgtgg aaaagctatt  
3961 ggatttaagt tggacagagt catgtaaacc aacagcaact gaacctat ttaagaagt  
4021 ragtccatgg gaaatcatca ctctagctt ttttctatt ttggctcgg ccgttggtc  
4081 ctatcttacc cagactacc gccgtcacag tctgtctcc ttgtctttg cotcatatcg  
4141 tcaggtagct agtttogggt cagctgtctc tcccagacag ttgatgcat ctcaattcag  
4201 ccaaggccct gtcctggca ctgtgtctga ctggatcca cagtggcgt ctgtcccac  
4261 aggacctccc cagaaccac ctctgcacc ctattgtggc attgtttt caggagctc  
4321 attagctct gcacagtctg ctccactgca acaactgga ggcttacta ccaggcttc  
4381 tgtggcacc ttccctgagc tggattctcc ccagctcat ttctcttc ctacagacc  
4441 tgateccatc agaggttttg ggtctatca tccctctgct tactctctt ttactttca  
4501 acctccgca gctctttga ctgccaacct taggtgcca atggcctctg ctctaccta  
4561 ggctcttgc agtcagtc ccgactacco agtagatctc tgtctctag aagaatcagt  
4621 aggcagctc gaaggagtc gatgtctgt ctgtctttt caaagttctg acacagaaag  
4681 tgatgagcta tcagaagtac ttcaagacag ctgctttta caaataaat gtgatacaa  
4741 agatgacagt atcccgtgt ttctggagt aaaagaagag gatgaatag tgtgcacaca  
4801 acactggcag gatgtgtgc ctggacaga actcctcagt ctacagacag aggatggctt  
4861 ctggaaactt acaccagaac tgggacttat attaaactt aatacaaat gtttcacag  
4921 ctctttaa caaaaaggca ttcaatctt aggtgtaaaa ggaagagaat gtctctgga  
4981 cctaattgcc acaatgctgg tactacagt tattcgacc aggttgaaa aagagggaat  
5041 agtggtcaaa tcaatgatga aaatggatga ccttotatt tccaggaata ttccctgggc  
5101 tttaggca ataaagcaag caagtgaatg ggtaagaaga actgaaggao agtaccatc  
5161 tatctgcca cggcttgaac tggggaacga ctgggactct gccaccaagc agttgtggg  
5221 actccagccc ataagcactg tgtccctct tcatagagtc ctcaatfca gtcaaggcta

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5281 agtcaaatga aactgaattt taaactttt gcatgcttct atgtagaaa taatcaaatg  
5341 ataatagata ottataatga aacttcattt aggttcattt cagtgtagca attactgtct  
5401 ttaaaaatta agtgggaagaa gaattacttt aatcaactaa caagcaataa taaaatgaaa  
5461 cttaaaat

## Sequence 2 – Human cDNA sequence of PARP-2

1 ctagaattca gcggcogctg aattctaggc ggcgogggcg cgacggagca ccggcggcgg  
61 cagggcgaga gcattaaatg aaagcaaaag agttaataat ggcaacacgg ctccagaaga  
121 ctctccct gccaaagaaa ctgtagatg ccagagacag gaggcgaaaa agatgcctgt  
181 ggctggagga aaagctaata aggacaggac agaagacaag caagatggta tgccaggaag  
241 gtcattggcc agcaaaaggg tctctgaatc tctgaaggcc ttgctgtta agggcaaacg  
301 tctgtggac ccagagtgtg cagccaaggt ggggaaggct catgtgtatt gtgaaggaaa  
361 tgatgtctat gatgtcatgc taaatcagac caatctccag tcaacaaca acaagtacta  
421 tctgattcag ctattagaag atgatgcca gaggaaactc agtctttgga tgagatggg  
481 ccgagttggg aaaatgggac agcacagcct ggtggctgtg tcaggcaato tcaacaagg  
541 caaggaaatc tticagaaga aattcctga caaacgaaa acaattggg aagatcgaga  
601 aaagtgtgag aaggtgcctg gaaaatatga tatgtacag atggactatg ccacoatac  
661 tcaggatgaa gaggaacaa aaaaagagga atctctttaa tctccctga agccagagtc  
721 acagctagat ctctgggtac aggagttaat aaagtgaic tgtaatgtc aggccatgga  
781 agaatgatg atggaatga agtataatc caagaaagcc ccattggga agctgacat  
841 ggcacaaato aaggcaggt accagtctt taagaagatt gaggattgta ttgggctgg  
901 ccagcatgga cgagcttca tggagcatg caatgaatic tacaccagga ttccgcatga  
961 ctgtgactc cgtactctc cactaatccg gacacagaag gaactgtcag aaaaaatca  
1021 attactagag gctttgggag acattgaaat tgcattaaag ctggtgaaaa cagagctaca  
1081 aagcccagaa caccattgg accaacacta tagaaacctt cattgtgcct tgcgccct  
1141 tgaccatgaa agttacgagt tcaaatgat ttccagtag ctacaatcta cccatgtcc  
1201 cacacacagc gactatacca tgacctgtc ggatttgtt gaagtggaga aggaigtga  
1261 gaaagaagcc tticagagag accctcataa caggatgctt ctatggcatg gtccaggat  
1321 gagtaactgg gtgggaatct tgagccatgg gcttogaatt gccaccctg aagctccat  
1381 cacaggttac atgtttggga aaggaatcta ctgtctgac atgtcttcca agagtggcaa  
1441 ttactgctt gccctcgcg taaagaatac aggaactgtg ctctatcag aggtagctt  
1501 aggtcaggt aatgaactac tagaggcaa tctaaggcc gaaggattgc tcaaggtaa  
1561 acatagcacc aaggggctgg gcaagatgg tccagttct gccacttcg tcacctgaa  
1621 tgggagtaca gtgccattag gaccagcaag tgacacagga attctgaatc cagatggta  
1681 taccctcaac tacaatgaat atattgtata taacccaac caggtcgtg tgcggtac  
1741 tttaagggt cagtttaatt tcttcagct gtggtgaatg ttgatctaa ataaaccaga  
1801 gatctgatc tcaagcaaga aaataagcag tgtgtactt gtgaatttg tgatattta  
1861 tgtaataaaa actgtacagg tctaaaaaa aaaaaaaaa aaaaaaaaa

## Sequence 3 – Human cDNA sequence of PARP-3

1 tgggactggc cgcctgactc ggccctgccc agcctctgct tcaccccact ggtggccaaa  
61 tagccgatgt ctaatcccc acacaagctc atccccggcc ttggggattg ttgggaattc  
121 tctcccta at tcacgcctga ggotcatgga gattgctag acctgggact gccctgggag  
181 ggcacacaa ccaggccggg tggcagccag gaactctccc atgtccctgc ttctctggc  
241 catggctcca aagccgaagc cctgggtaca gactgagggc octgagaaga agaaggggccg  
301 gcaggcagga agggaggagg accccttcg ctcacccggt gaggccctca aggccatacc  
361 cgcagagaag cgcataatcc gcgtggatcc aacatgtcca ctcagcaga accccgggac  
421 ccaggtgtat gaggactaca actgcaccot gaaccagacc aacatcgaga acaacaaca  
481 caagtctat atcatccago tgcctcaaga cagcaaccgc ttctcacct gctggaaccg  
541 ctggggccgt ggggagagg tggccagtc aaagatcaac cacttcaca ggctagaaga  
601 tgcaagaag gacttgaga agaaatttc ggaagacc aagaacaact gggcagagcg  
661 ggaaccatt gtgtctacc cgggcaagta cacactatc gaagtacagg cagaggatga  
721 ggccaggaa gctgtgtga agtgagcag aggccagtg aggactgtga ctaagcggg  
781 gcagccctgc tccctggacc cagccacgca gaagctatc actaacatct tcagcaagga  
841 gatgtcaag aacaccatgg cctcatgga cctggatgtg aagaagatgc cctgggaaa  
901 gctgagcaag caaagattg cagggggtt caggccctg gaggcgtgg aggaggccct  
961 gaaaggcccc acggatgtg gccaaagcct ggaggagctg tctcacact ttacaccgt  
1021 catcccgac aacttcggcc acagccagcc cccgccatc aattccctg agctctgca  
1081 ggccaagaag gacatgtgc tgggtctgc ggacatcgag ctggccagg cctgagggc  
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1201 gcttctcaag tgcagctgc agctgtaga ctgggagca cctgagtaca aggtgataca  
1261 gacctacta gaacagactg gcagcaacca cagggtccct acactcaac acatctggaa  
1321 agtaaaccaa gaaggggagg aagacagatt ccaggccac tccaaactgg gtaatcgaa  
1381 gctgtgtgg catggacca acatggccgt ggtggccgcc atctcacta gtgggtccg  
1441 catcatgcca cattctggg ggcgtgtgg caagggcac tacittgcct cagagaacag  
1501 caagtcagct ggatatgta ttggcatgaa gtgtggggc caccatgtg gotacatgt  
1561 cctgggtgag gtggccctgg gcagagagca ccatacaac acggacaacc ccagcttgaa  
1621 gagccacct cctggcttg acagtgtat tggcagagc cacaccgagc ctgatccgac  
1681 ccaggacact gagtggagc tggatggcca gcaagtggg gtgcccagg gccagcctgt  
1741 gccctgcca gattcagca gtccacatt ctccagagc gattaccca tctaccagga  
1801 gagccaggt ogcctgcct acctgctgga ggtccacctc tgagtggccg cctgtcccc  
1861 cggggctctg caaggctgga ctgtgatct caatcatct gccatctct ggtaccctta  
1921 taccctct tttttcaag aatacaatac gtgtgtgta actatagta ccatgtgta  
1981 caagatccct gaactatgc ctctaactg aaattttgta ttcttgaca catctgcca  
2041 gtccctctc tcccagcca tggtaaccag cattgactc ttacttgta taagggcagc  
2101 tttataggt tccacatga agtgagatca tgcagtgtt gtctttctg gcctggctta  
2161 ttcaactag cataatgtc accgggttca ccatgttt cataaatgac aagatttct  
2221 ccttaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aaa

## Sequence 4 – Human gDNA sequence of Tankyrase 1

1 cgaagatggc ggctgcgctg tgcctcagc atcatcacca ccacatcaa caacagctcc  
 61 agcccgcccc aggggcttca gcgcgcctgc cgcacacctc tccccactc agccctggcc  
 121 tggcccgagg gaacacccca gctctctcca oggcccaggc cctggccccc ttgcctccc  
 181 cgcggcacgg cctagcgtg cggaggggg atggcagtcg ggaaccgccc gacaggcccc  
 241 gatcccgga ccgggttgac ggtacagct gttgcagtc caccagcaca atctgtaccg  
 301 tcggcccgcc tcccgtggc ccagcgggtt ctatttcac tgcgcgtggg gtgcgtccc  
 361 acccagcggc cagtggcagt aacaattca cgtgcctc ttctcccg acttttctt  
 421 catcttctc tctatctcc cctggatga gcttggcga gagccccag gcggccggag  
 481 ttgcagcac agcaccactg gggcctgggg cagcaggacc tgggacagg gtccbcagc  
 541 tgagcgggg cctacggga ctgctggag cctgtgcaa tggggacgtg tccgggtaa  
 601 agagcctgtt ggacgggca aacgtaaat caaaggacat ggccggccgg agtcttctc  
 661 cctgcaott cgttcaggt ttggaagg aagatgtgt aghabacta ctacagatgg  
 721 gtgttaagt ccacgtcgt gatgaggag gtctcatcc gttcataat gcctgttct  
 781 ttggccatgc tgggtgtg agtctgtat tggccaagg agotgatca aatgccagg  
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 901 ttgtctgtt gcagcaggga gctgaacca acattggaa cactgatgg aaatcagcc  
 961 tggactggc agatcttca gcaaaagct tocttaccg tgaatacag aagacgaac  
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 1081 atgtgaatt ccattgcaat gatgggbga agtcgactc ttacacta gcagcgggt  
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 1261 aactgctat aagcatgga gcttgtgtt atgcatgga tctgtgcag ttactccac  
 1321 tgcacaggc tgcctcaag aacgtgtg agtctgctc ttgttactt agccatggc  
 1381 ctgactatc gttagtcaa tggcatggca aaagtctgt ggataggtt ccaactcgg  
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 1621 aagtacaga attgtactt agaaaaggag caaatgtta tgaaaaaat aaagtattca  
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 1741 agcatgggc caagtgaat gcactggca ccttggta gactgcttg catagagccg  
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 1921 tgagtgtag ttacggctt gacccctca tcatctctt acaaggctt acagcagc  
 1981 agatgggca tgaagcagt cagcagatt tgaaggta tctgtagata gtgacttc  
 2041 tacttcagc ttaattgta ttigagaag ggaagattt gaaggaaat tatccagat  
 2101 gtcttactg tcaacatga gattacact atactactt ctgatttga ttatcagc  
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 2221 gtgaattga gagacttga gggccggc tccacgccc tactcttcg agcaggctac  
 2281 aacagagta acctatcgt acttctgat ttgattatg actcttagg gcatctaaag  
 2341 ctggagactt ggaaactgt aagcaactt gcagctcca aatgtgaat ttagagact  
 2401 tagaggccg gacttcacg ccttacat tgcagcagg ctacaaccg gtgtctgtg  
 2461 tagagtact gctacaccac ggtgcgatg tccatgcaa agacaagggt ggttgggtc  
 2521 ccctcataa tgcctgttca tatggacat atagggtgc tgaacttta gtaaggcatg  
 2581 gggcttctg caatggggc gacttatga aattacccc tctccatga gcagcagta

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2641 aaggaaagta tgaatctgc aagctcctt taaaacatgg agcagatcca actaaaaaga  
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2761 tactgaaagg ggaatgctgt ttgttgatg ctgccaagaa ggcctgcctg gcaagagtcg  
2821 agaagctctg taccacagag aatatcaact gcagagacac ccagggcaga aatcaacccc  
2881 ctctgcacct ggcagcaggg tataataacc tggagtagc tgaatactt ctgagcagc  
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3061 ataagtgggo gttactccc ctccatgaag cagccagaa aggaaggagc cagctgtgcg  
3121 cccctctct agogcatggt gcagacccca ccatgaagaa ccaggaggc cagacgcctc  
3181 tggatctggc aacagctgac gatatcagag cttgtctgat agatgccatg ccccagagg  
3241 ccttacctac ctgtttaaa cctcaggcta ctgtatgag tgcctctctg atctaccag  
3301 catccacccc ctctgcctc toggctgcca gcagcataga caacctact ggoccttag  
3361 cagattggc cgtaggagga gccccaatg cagggaatgg cgcgcggga acagaaagga  
3421 aggaaggaga agtctgtgt ctgacatga atatcagcca atttctaaa agccttggcc  
3481 ttgaacacct togggatac ttgaaacag aacagattac actagatgtg ttggctgata  
3541 tgggcatga agagtggaa gaaataggca tcaatgcata tgggcacgcg cacaattaa  
3601 tcaaaaggat agaaagactc ttgggtggac aacaaggcac caatcctat ttactttc  
3661 actgtcttaa tcagggaacg atttctgtg atctgtctc agaagataaa gaatatcagt  
3721 cagtggaaga agagatgcaa agtactattc gagaacacag agatggtgtt aatgctggcg  
3781 gcatctcaa cagatacaat gtcattcga tcaaaaagt tgcacaag aagttaggg  
3841 agcgggtctg ccacgcagc aagggaagtgt ctgaggagaa tcacaacct cacaatgagc  
3901 gcatgtgtt tcatgttct ccttcttta atgccattat tcataaaggg ttgatgagc  
3961 gacatgcata cataggagga atgttgggg ccgggatta ttigtgaa aactcctcaa  
4021 aaagcaaca atatgttat ggaattggag gaggaacagg ctgccctaca cacaaggaca  
4081 ggtcatgcta tatatgtcac agacaatgc tctctgtag agtgacctt gggaaatcct  
4141 ttctgcagt tagcaccatg aaatggccc acgcgcctcc agggcaccac tcagtcatg  
4201 gtgaccgag cgtcaatggg ctggcatatg ctgaatatgt catctacaga ggagaacagg  
4261 cataccaga gtatctatc acttaccaga tcatgaagcc agaagccct tccagaccg  
4321 caacagccg agagcagaag acctagtga tgcctgctg tgaaggccag atcagattc  
4381 aacctgggac tggattacag aggattgtt ctataacaa catcaatatt ctgaagtcc  
4441 ctgacagcct agaaataagc tgtttgtct ctataaagca ttgctatagt g

## Sequence 5 – Human mRNA sequence of Tankyrase 2

1 cgccgccgcct cgctagccga aacctgcoca gccgggtgcc gccactgctg cacgcgcggg  
61 acgacgtcac gtgcgtccc ggggtggac ggagotggca ggaggggctt tgcagcttc  
121 cggcgcgcgc togtttcagg acccggatgg cggattcgcg ctgcctccgc cggcgcgggg  
181 cagccggggg gcaggagacc cagcgagggg cgcgcgtggg cggcgccatg ggcactgcgc  
241 ggcacgggtg acagcaggga gccaaagcgg cggggccctg agcgcgtctt ctcggggggg  
301 cctcgccctc ctgctcgggg gcccggggtt ootgctccgg ttgctggggg ttgtctggc  
361 tgtggcggcg gccaggatca tctcgggtcg ccgtcgcgc gccgggggag cggctcgc  
421 gagcgcgcgc gccaggcccg tggagccggc cggcgagag ctgttcgagg cgtgcgcaa  
481 cggggagcgt gaacgagtc agaggctgg gacgccgag aaggtgaaca gccgcgacac  
541 ggcgggcagg aatccacc cgtgcactt cgcgcaggt ttgggggga aagcgtagt  
601 tgaatattg ctacagaatg gtgcaaatg ccaagcagc gatgatgggg gccattatcc  
661 tctcacaat gcatgctctt ttgtcagc tgaagtgc aatctctt tgcacatgg  
721 tgcagacccc aatgcgcag ataattgga ttactctt ctccatgaag ctgcaattaa  
781 aggaagatg gatgttgca ttgtctgt acagcatga gctgagcaa ccatcggaaa  
841 tacagatga agcacagcat tggattag agatccatct gccaaagcag tgcctactgg  
901 tgaatataag aaagatgaac tcttagaag tgcaggaggt ggcattgaag aaaaaatgat  
961 ggtctctact acaccattaa atgcaactg ccacgcaagt gatggcagaa agtcaactcc  
1021 attacattg gcagcaggat ataacagat aaagattga cagctgtat tgcacatgg  
1081 agctgatgc catgctaaag ataaaggta tctgttaca ttacacaatg cctgttcta  
1141 tggctattat gaagtaactg aacttttgg caagcatggt gcctgtgaa atgcaattga  
1201 ctgtggcaa ttactcttc ttcatgagg agctcttaag aacaggggtg aagtatgtt  
1261 tcttctcta agtatggg cagaccac acgtctaat tgcacataa aaagtctat  
1321 agacttggct cccacacc acgttaaa aagattgca tatgaata aaggccactc  
1381 gtgtctgcaa gctgcagag aagctgatg tactcgaac aaaaaacac tctcttga  
1441 aatggatga ttcaagcat ctcaaacaca tgaacagca ttgattgtg ctgctgcatc  
1501 tccatctcc aaaaagagc aatatgtg actgttgta agaaaaggag caaacatcaa  
1561 tgaagagact aaagaattct tgaactctt gcatgtgga tctgagaaag ctcaatga  
1621 tgtgttgaa gtatgggtg aacatgaagc aaaggttat gctctggata atotgtgta  
1681 gacttctta cacagagctg catattgtg tcatctaca acctgccgc tactctgag  
1741 ctatgggtg gatctaaac ttatatccct tcagggttt actgcttiao agatgggaaa  
1801 tgaatattga cagcaactcc tcaagaggg tatctatta ggtatctag aggcagacag  
1861 acaattgctg gaagctgcaa agcctggaga tgcgaact gtaaaaaaac tgtgtactgt  
1921 tcagagtgc aactgcagag acattgaag gctcagctt acaccacttc atttgcagc  
1981 tgggtataac agagtgtcg tgggtgaata tctgtacag catggagctg atgtgcatg  
2041 taaagataaa ggaggccttg taccttgca caatgcatt tctatggac attatgaagt  
2101 tgcagaactt ctgttaaac atggagcagt agttaatga gctgattat ggaatttac  
2161 acctttacat gaagcagcag caaaaggaaa atatgaatt tgcacacttc tgcctcagca  
2221 tgggtcagac cctacaaaaa aaacaggga tggaaatact ccttggatc ttgttaaga  
2281 tggagataca gatattcaag atcgtctag gggagatga gctttgtat atgtgcacaa  
2341 gaagggtgt ttagccagag tgaagaagt gtctctct gataatgaa attgcgcga  
2401 taccacaggc agacattcaa cactttaca tttagcagc ggtataata attagaagt  
2461 tgcagagta ttgtacaac acggagctga tgtgaatgc caagacaaag gaggacttat  
2521 tctttacat aatgcagcat ctacgggca tgtatgta gcagctctac taataaagta  
2581 taatgatgt gtcaatgca cggacaaatg gctttcaca ccttgcacg aagcagccca



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2641 aaagggacga acacagcttt gtgcttgtt gctagcccat ggagctgacc cgactcttaa  
2701 aaatcaggaa ggacaaacac cttagatti agtttcagca gatgatgca ggcctctct  
2761 gacagcagoc atgccccat ctgctctgcc ctctgttac aagcctcaag tctcaatgg  
2821 tctgagaagc ccaggagcca ctgcagatgc tctctottca ggcccatcta gcccatcaag  
2881 cctttctgca gccagcagtc ttgacaactt atctgggagt tttcagaac tctctcagt  
2941 agttagtica agtggacag aggggtgttc cagtttgag aaaaaggagg ttccaggagt  
3001 agattttagc ataactcaat tctgaaggaa tcttggaact gacaccta tggtatat  
3061 tgagagagaa cagatcaact tggatgtatt agttgagnig gggcacaagg agctgaagga  
3121 gattggaatc aatgcttatg gacataggca caaactaatt aaaggagtcg agagaattat  
3181 ctccggacaa caaggtctta acccatatti aacttgaac acctctgga ttggaacaat  
3241 tcttatagat ctgtctctg atgataaaga gtticagtct gtggaggaag agatgcaag  
3301 tacagtica gagcacagag atggagggtca tgcagggtga atctcaaca gatacaatat  
3361 tctcaagatt cagaagggtt gtaacaagaa actatgggaa agatacactc accggagaaa  
3421 agaagtctt gaagaaaacc acaaccatgc caatgaacga atgctatttc atgggtctcc  
3481 tttgtgaat gcaattatcc acaagggtt tgaigaaagg catgctgaca taggtggtat  
3541 gtttgagct ggcatattt tigtgaaaa ctctccaaa agcaatcaat atgtatatgg  
3601 aattggagga ggtactgggt gtccagtica caaagacaga tctgttaca ttgccacag  
3661 gcagctgctc tttgccggg taacctggg aaagtcttc ctgcagtica gtgcaatgaa  
3721 aatggcacat tctctccag gtcactcact agtcactggt agggccagtg taaatggcct  
3781 agcattagct gaattgtta ttacagagg agaacaggct tatctgagt attantiac  
3841 ttaccagatt atgaggcctg aaggtatgtt cgttggaata atagtattt taagaaacta  
3901 attccactga acctaaaac atcaaagcag cagtggcctc tacgtttac tctttgctg  
3961 aaaaaaato atcttgcca caggcctgtg gcaaaaggat aaaaatgta acgaagtta  
4021 acattctgac ttgataaagc tttaaatg tacagtgtt tctaaatatt tctgtttt  
4081 tcagcactt aacagatgcc attccaggtt aaactgggt gtctgtacta aattataaac  
4141 agagttaact tgaaccttt atagtattg cattgattct aacaaactgt aatgccctca  
4201 acagaactaa tttactaat acaatactgt gttcttaaa acacagcatt tacactgaat  
4261 acaattcat ttgtaaaact gtaataaaga gctttgtac tagccagta ttatttaca  
4321 tgccttgta atataaatct gtttagaac tgcagcgtt tacaaaatt ttcatatgt  
4381 attgtcact tatacticat ctacatcgt catgatgag tgaactttac attgattcc  
4441 agaggctatg ttcagtgtt agttgggaaa gattgagta tcagatttaa ttgccgatg  
4501 ggagccttta tctgtacta gaaactttc tcatthaaga acttatgaat atgctgaaga  
4561 ttaattgt gataccttg tatgtatgag acacattcca aagagctcta actatgatag  
4621 gtcttgata cttaagaagc ttcttactg gctcaatt ctgacttca tgttgaaaa  
4681 tttctgcag tcttctgtg aaattagag caaagtgtc ctgtttta gagaactaa  
4741 atctgtctg tgaacaatta ttgttctt tcatggaac ataagtagga tgttaacatt  
4801 tccagggtgg gaagggtat cctaaatcat ttccaatct attctaatta ccttaaatct  
4861 aaaggggaaa aaaaaatca caaacaggac tgggtagtt ttatcctaa gtatatatt  
4921 tctgttctt ttacttgg ttattgtctg tatttatagc caatctatc atcatggga  
4981 aacttaacc agaactataa aatgtagtgt ttccagtcct ctccagcct cctgaatggg  
5041 caagtgcagt gaaacagggt ctctctgctc ctgggtttc tctccatgat gttatgccca  
5101 attggaata tctgtcagt ttgtcacca tatggtgacc acgctgtgc tcatgttggc  
5161 agctatagaa ggaatgtctg tccataaaa tgcctccct atttataa taacactct  
5221 ttccaggaag catgcttaag catctgtta cagagacata catccattat ggcttggcaa  
5281 tctctttat ttgttactc tagctccct caaagtcag gaaagatct tactcacta  
5341 atgaggacat tcccatcac tgtctgtacc agttacact tatttactg ttattcagt  
5401 ctgtaaatia actggccctt tgcagtaact tttacataaa gtgtagaaa atcatgttc

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5461 ttgtcctgag taagagttaa tcagagtaag tgcatttcg gagttgttc tgtatgtaa  
5521 attatgatca ttatttaaga agtcaaatcc tgaicttgaa gtgctttta tacagctctc  
5581 taataattao aaatatccga aagtcattc ttggaacaca agtggagtat gccaaatttt  
5641 atatgaattt tcagattat ctaagcttc aggtttata attagaagat aatgagagaa  
5701 ttaatggggt ttataattac attatcttc aactatgtag cccatattac tcaccctatg  
5761 agtgaatcig gaattgcttt tcatgtgaaa tcatgtggt ctatgagttt acaatactgc  
5821 aaactgtgtt atttatcta aaccattgct taatgagtgt gttttccat gaatgaatat  
5881 accgtggtc atattttagc atggcagcat tticagatag cttttgtt gtigggaagt  
5941 tgggtttg gggggagggg gattattgt acgttgcatg gaatagccta cttataatg  
6001 atgggaatgc ttttcattt gtittggat ttttttt gaagtgaat ttaactttt  
6061 gtgcagtag tactattata cccatctca gtgtcttact tgtactgtat caaattccat  
6121 accctcattt aattcttaat aaaactgttc actgtaaaa aaaaaaaaaa aaaaaaaaaa  
6181 aaaaaaaaa

## Sequence 6- Human mRNA sequence of VPARP

1 ogcccgocca gccccggggg cagggaagc ctaattacg gaattaccgc gagcaaggag  
61 cgcggaatcg gggagcgtcc ggagctagct ggatcctota ggcaggatgg tgatgggaat  
121 ctttgcaaat tgtatcttct gttgaaagt gaagtactta cctcagcagc agaagaaaaa  
181 gctacaaact gacattaagg aaatggcgg aaagtttcc tttcgttaa atcctcagtg  
241 cacacatata atcttagata atgtgatgt tctgagtcag taccaactga attctatcca  
301 aaagaaccac gticatatgg caaaccaga ttttatatgg aaatctatca gagaabaagag  
361 actcttggat gtaagaatt atgatoctta taagccctg gacatcacac caccctctga  
421 tcagaaggcg agcagttctg aagtgaaac agaaggctta tgcccggaac gtgccacaga  
481 ggaggaagac actgtggaac tcaactgagtt tggatgcag aatgttgaaa tttctatct  
541 tctcaagat ttgaagttg caaatataa caccitggag aaagtgggaa tggagggagg  
601 ccaggaagct gtggtggtgg agcttcagtg ttgcgggac tccaggagact gtcttctct  
661 gatctctca cacttctcc tggatgatgg catggagact agaagaoagt ttgtataaa  
721 gaaaacctct gaagatgcaa gtgaatactt tgaaaattac attgaagaac tgaagaaaca  
781 aggtttcta ctaaggaac attcacacc tgaagcaacc caattagcat ctgaacaatt  
841 gcaagcattg ctttggagg aagtcagaa ttcaagcact ctgagccaag aggtgagcga  
901 tttagtagag atgatttggg cagaggccct ggccacactg gaacacatgc ttctcaagcc  
961 agtgaacagg attagcctca acgatgtgag caaggcagag gggattctoc tttagtaaa  
1021 ggcagcactg aaaaatggag aaacagcaga gcaattgcaa aagatgatga cagagtttta  
1081 cagaotgata cctcacaaag gcacaatgcc caaagaagtg aacctgggac tatggctaa  
1141 gaaagcagac ctctgccagc taataagaga catggttaat gtctgtgaaa ctaatttgc  
1201 caaaccacac ccacatccc tggccaaata ccgagctttg aggtgcaaaa ttgagcatg  
1261 tgaaacagaat actgaaghaa ttctcagggt tagaaaagag gttttgcaga atcatcacag  
1321 taagagccca gtggatgct tgcagatatt tagagttggc agagtgaatg aaaccacaga  
1381 gttttgagc aaacttggta atgtgaggcc ctgttgcat ggttctctg taaaaacat  
1441 cgtgggaatc ttgtctgag gttgtcttt acccaaatga ttggaagatc gtggtgtgca  
1501 aagaacagac gtcggaaaac ttggaagtgg gatttatitc agtgattogc tcaatcaag  
1561 tatcaagtac tcacaccgg gagagacaga tggcaccaga ctctgtctca ttgtgacgt  
1621 agccctcgga aagtgtatgg acttcatga gaaggacttt ccttaactg aagcaccacc  
1681 aggtactgac agtgtgcaig gatttcaca aacagcctct gtcaccacag actttgagga  
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2041 cacaataaa agtcacgtgc ccattgagc aaaatataic tttcctttgg atgacaaggc  
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2161 gaaggaagaa gccagcaag agtacotaga agccgtgacc cagggccatg gcgttacct  
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2461 gactatgtct attgagatgc cgtatgtat tgaattcatt ttcaagtata cacatgaact  
2521 gaaacaaaag cgcacagact gcaagctgt cattagcacc atggaaggca gtcctttaga

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2581 cagcagtgga tttctctcc acatcggtt gtctgtgoc tatctocaa gaatgtgg  
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2701 tctcgacctc octgacctag ccagtgagag cgaagtgaat atttgtcttg actgtctcag  
2761 ttccatggag ggtgtgacat tcttgaagc caagcaaat acottgcatg cgtgtcctt  
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3001 tgcctgaggg tcacggaaca tcttctggt gtctgatggg cacctccagg atgagagcct  
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3181 atatttaat gcaaaatcca agcatagtg gagaaaacag atagaagacc aatgaccag  
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3421 agaatttgt acaatgggt cactactga gcttcagaag acaactggaa ctatgacca  
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5341 ataagata attaatga aacttatta aggttcat cagttagca attactgtc

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5401 ttaaaaatta agtgggaagaa gaattacttt aatcaactaa caagcaataa taaatgaaa  
5461 cttaaaataa aaaaaaaaaa aaaaaaaaaa

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